

REMARKS

This is in response to the non-final Official Action currently outstanding with respect to the above-identified application.

Applicants respectfully ***traverse each and all of the Examiner's currently outstanding rejections***. Accordingly, no claims are amended, added or canceled by this Response to the currently outstanding Official Action. Claims 1-18 as they currently are presented in this application, therefore, continue to constitute the claims under active prosecution. Claims 1-18 as they presently stand are reproduced hereinabove for convenience of reference.

In the currently outstanding Official Action, the Examiner has:

1. Acknowledged our claim for foreign priority under 35 USC §119 (a)-(d) or (f), and confirmed the receipt of the required certified copy of the priority document by the United States Patent and Trademark Office;
2. Indicated that Applicants' Request for Continued Examination is proper and has been entered;
3. By inference indicated that his previous indications concerning the acceptability of the drawings and consideration of submitted Information Disclosure Statements are considered to be present in this application;
4. Maintained his previous allowance of Claims 1-10;
5. Indicated that Claims 15-18 are allowed;

6. Rejected Claims 11-12 under 35 USC 102(e) as being anticipated by the Maeda reference (U.S. Patent No. 6,389,162);
7. Objected to Claims 13 and 14 as being dependent from a rejected base claim, but indicated that those claims would be allowable if rewritten in independent form including all of the limitations of their respective base claims and any intervening claims; and
8. Cited certain additional references as being “pertinent” to Applicants’ disclosure, but failed to apply any of the latter references against any of the presently pending claims.

Only items 6 and 7 require further comment in these Remarks.

Claims 1-10 of this application were originally allowed on the first action. In the Examiner’s statement of his reasons for allowance that accompanied the Notice of Allowability of 6 July 2003 in this application, it is suggested that the Maeda reference does not teach, disclose or suggest “defining as the background density as a density class which is closest to the first threshold of all of the density classes which belong to the background density determination area” at least in combination with the other features of allowed Claim 1. In fact, the Examiner states in his reasons for allowance that:

The closest reference of US 6389162 to Maeda discloses a method and an apparatus for determining the thresholds from a histogram and removing the noises from the background. However, he does not teach the limitations cited above. (Emphasis added)

Nevertheless, the Examiner now takes the position that the background density class closest to the first threshold in the Maeda reference constitutes all of the pixels in the range bt0-bt1 as allegedly shown in Figure 2 of the Maeda reference. Further, the Examiner asserts that that background class is represented by the representative background density bL discussed with respect to Figure 7 by the Maeda reference.

In addition, the Examiner now suggests that Maeda performs noise correction ***based upon the density classes of the background***, and that Maeda sequentially compares the frequencies in the background density determination area with the first threshold ***so as to determine the first density class having a frequency over the second frequency as the background density*** citing Column 13, line 65 to Column 14, line 6 of the Maeda reference (which deal with the removal of the pixel density values (classes) contained in the histogram that represent noise).

Applicants respectfully submit that the Examiner has misunderstood the teachings of the Maeda reference in the course of his consideration of newly submitted Claims 11-18. Accordingly, as indicated above, Applicants respectfully ***traverse each and all of the Examiner's outstanding rejections***. The bases for this traversal are explained below.

In particular, Applicants respectfully submit that the Examiner has confused Maeda's outputted so-called "representative density value" as the background density value at all of the pixels of a background area with the pixel density values (classes) of an input image contained in the pixel histogram used in the course of the separation of the background area from noise. Further, Applicants respectfully submit that this mistaken interpretation is fundamental thereby rendering the remainder of the Examiner's argument inapposite to the present invention as set forth in Claims 11-14.

The true fact is that as the Examiner apparently previously recognized, the Maeda reference unquestionably indicates that there are a plurality of density values (classes) in the background density determination area between bt0 and bt1. Thus, for example, it will be seen from Column 6, lines 31-53, that the Maeda histogram forming unit 3 is constituted by 256 counters, and that histogram forming unit 7 that forms a histogram of the output of quantizing unit 6 is constituted by 101 counters. Also, at Column 8, lines 1-34, Maeda describes a method of noise removal that results in the definition of the width of the densities of the background area. Further, at Column 9, line 45 to Column 10, line 24, Maeda explains how the density values of each of the pixels represented by each of the density values (classes) of the background density between bt0 and bt1 is set at the so-called background representative density b (which according to Column 7, lines 22-31, is the pixel value of the pixels appearing with the maximum frequency in the histogram). Similar explanations of the Maeda method are set forth elsewhere in his specification. Accordingly, Applicant respectfully submits that the Examiner's argument to the effect that the Maeda reference discloses, teaches or suggests that there is only one background class (density level) between bt0 and bt1 is not only not supported by the Maeda specification, but also is specifically contrary to the teachings thereof.

Second, Applicants respectfully submit that the Examiner's misunderstanding of the Maeda reference is further clear from his discussion concerning Claim 11 when taken in conjunction with his discussion concerning Claim 12 in the currently outstanding Official Action. Specifically, contrary to his assertion with respect to Claim 11 that there is only one density class between bt0 and bt1, the Examiner admits with regard to Claim 12 that the Maeda reference clearly discloses that there are multiple density classes (i.e., levels) between bt0 and bt1.

Further, Applicants respectfully submit that the portion of the Maeda reference relied upon by the Examiner (i.e., Column 13, line 65 – Column 14, line 6) simply shows noise removal resulting in the definition of a background area. This is clear from the Maeda reference at Column 13, lines 54-64.

Thus, the more relevant portions of the Maeda reference follow the portion thereof referred to by the Examiner in connection with his rejection of Claim 12. Specifically, Applicants respectfully submit that the portions of the Maeda reference following those referred to by the Examiner indicate that no attempt is made by Maeda to determine the first display class having a frequency over the second threshold in the direction departing from the first threshold. Instead, as mentioned above, Maeda uses the histogram values to remove noise (which in turn results in a determination of the background areas), after which the background representative density (which is the pixel density value appearing with the maximum frequency in the background area as determined by the histogram) is output as the value of all of the pixels within the background area regardless of which of the multiple density classes of the background area each individual pixel may belong (See, for example, Maeda, Column 16, line 61 to Column 17, line 7).

Third, Applicant respectfully submits that the background representative density b or b_L referred to in the Maeda reference is the largest (i.e., the maximum) density class (level) between bt_0 and bt_1 , **not** the single class (level) between bt_0 and bt_1 as suggested by the Examiner. This point has been alluded to above, however, since it is important to the understanding of the Maeda reference it is repeated here. As stated by Maeda for example at Column 13, lines 24-34 and at Column 16, line 61 to Column 17, line 8:

After a histogram of all of the pixels of input image data is formed, the CPU operates the maximum frequency detecting unit **121** to detect the pixel value exhibiting the maximum output frequency value in the histogram (i.e., the pixel value corresponding to the maximum counter value), and outputs a detected output frequency value m and the corresponding pixel value. This corresponding pixel value indicates the background density of the L^* image data, and hence will be referred to as the background representative density bL . This background representative density bL is output from terminal **128**.

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As described above, according to the second embodiment, the background representative density bL of the L^* image data and the density width upper limit $bt1$ and the density width lower limit $bt0$ of the background are extracted on the basis of the histogram of the pixel values of the image data. All the pixel values within the range of the density width upper limit and $bt1$ the density width lower limit $bt0$ are for deciding a frequency noise threshold for removing frequency noise on the basis of the output from the histogram forming unit **124** and the quantization step q calculated by the quantization step calculating unit **121**.

In short, Applicant respectfully submits that the Maeda reference does **not** disclose “determining as the background density a density class which is closest to the first threshold of all of the density classes which belong to the background density area” as set forth in Claim 11 of the present application. Instead, the Maeda reference discloses that the background density is to be determined based on the maximum background representative density (b , bL) of all of a plurality of densities between $bt0$ and $bt1$ and that that representative density is to be output for all of the pixels of all of the plurality of density classes between $bt0$ and $bt1$.

Accordingly, it is to be understood that the present invention determines the background density based on the density class that is closest to the first threshold as the threshold density value for the background of all of the density classes that belong to the background density determination area rather than determining the density value based on the maximum density value. In other words, in the present invention, the most unlikely of the background density values among the plurality of background density classes that belong to the background density determination area is determined to be the background density. Thus, for example, as shown in Fig. 8 of the present application, in the present invention density class a that is the most unlikely background density class among the classes of the background density area is determined as to be the background density.

According to the teachings of the Maeda reference and contrary to the present invention, however, density class a2 shown in Fig. 8 of the present application, that is the maximum background density, would be determined to be the background density.

Consequently, it will be understood that even in the case where there are two kinds of background densities on a document with a patch, it remains possible to determine the background density area on the document correctly using the present invention. Applicant respectfully submits that this result is not achieved, nor is it in any way suggested by the Maeda reference.

Since in order to anticipate a claim under 35 USC 102 it is necessary that a single prior art reference disclose all of the elements claimed, and since Applicants have herein demonstrated that the Maeda reference relied upon by the Examiner fails to meet this standard with regard to presently pending Claims 11 and 12, Applicants respectfully submit that the Examiner has failed to demonstrate that the present invention as claimed in pending Claims 11 and/or 12 is anticipated by the Maeda reference.

Applicants therefore respectfully submit that for each and all of the foregoing reasons the Examiner's outstanding rejections of Claims 11-14 should be withdrawn, and that Claims 1-18 as currently presented in this application are in condition for allowance. Accordingly, reconsideration and a decision allowing Claims 1-18 in response to this communication are respectfully requested.

Applicants believe that additional fees are not required in connection with the consideration of this Amendment. However, if for any reason a fee is required, a fee paid is inadequate or credit is owed for any excess fee paid, you are hereby authorized and requested to charge and/or credit Deposit Account No. **04-1105**, as necessary, for the correct payment of all fees which may be due in connection with the filing and consideration of this communication.

Respectfully submitted,

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